



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,708	01/17/2002	Yukio Miyaki	Q67843	1272

7590 02/15/2005

SUGHRUE MION, PLLC  
2100 Pennsylvania Avenue, NW  
Washington, DC 20037-3213

EXAMINER
----------

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
----------	--------------

1746

DATE MAILED: 02/15/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/046,708

Applicant(s)

MIYAKI ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 33,35-37,39-53 and 56 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 33,35-37,39-53 and 56 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☒ Certified copies of the priority documents have been received in Application No. 08/981,011.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action addresses claims 33, 35-37, 39-53, and 56. The claims remain rejected under 35 USC §103 for the reasons of record. Accordingly, this action is made final.

### ***Terminal Disclaimer***

2. The terminal disclaimer filed on December 6, 2004 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent 6,365,299 has been reviewed and is accepted. The terminal disclaimer has been recorded.

### ***Claim Rejections - 35 USC § 103***

3. Claims 33, 35-37, 39-53, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kawakami et al (U.S. Pat. 5,824,434) in view of Idota et al (U.S. Pat. 5,618,640).

Regarding claim 33, Kawakami et al. teach a nonaqueous secondary battery comprising a positive electrode and a negative electrode both containing a material capable of reversibly intercalating and deintercalating lithium in column 3, line 65. A nonaqueous electrolyte containing a lithium salt is disclosed in column 46, line 17. Regarding claim 56, the electrolyte solvent is a carbonic ester (i.e., propylene carbonate) (see col. 46, line 17). Regarding claim 37,

the positive electrode comprises a protective layer (see col. 30, line 30). Regarding claims 36 and 44-46, the negative electrode comprises a protective layer that may comprise a composite layer containing two or more types of conductive, semiconductive, or insulating powder, and a resin (i.e., binder) (see col. 27, lines 35-44). The semiconductive material may comprise zirconia (see col. 26, line 41). The disclosure of any combination of conductive, semiconductive, or insulating material anticipates the subject matter of instant claims 40-43 (the particles or the layer has/have electrical conductivity, or substantially no electrical conductivity). Regarding claim 39, an insulating layer of the negative electrode may comprise polyethylene or a fluororesin (col. 23, line 66 and col. 27, line 1). Regarding claims 39 and 47-51, the negative electrode layer may comprise carbon (see col. 25, line 10), lithium fluoride, or magnesium fluoride (col. 24, line 56). Regarding claim 52, the layer is preferably 10 micrometers or thinner (see col. 28, line 19).

Kawakami et al. do not expressly teach that the negative active material is a composite tin oxide, as recited in claim 33, that the protective layer comprises conductive particles in an amount of 2.5-96 % by weight, as recited in claim 53, or that the protective layer comprises two binders in combination with an alkali metal or alkaline earth metal salt, as recited in claim 39.

However, it is submitted that the artisan would find it obvious to use at least two binders in combination with an alkali metal or alkaline earth metal salt in the protective layer. In column 27, line 1 et seq., the reference teaches that a halide (i.e., LiF, MgF<sub>2</sub>) and a resin such as polyethylene, polypropylene, or fluororesin are useful in the insulating layer. Therefore, it would be obvious to use any combination of these components in the protective layer of

Kawakami (particularly given Kawakami's teaching of a multi-component composite layer in col. 27, line 35). The courts have held that it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose (*In re Kerkhoven*, 205 USPQ 1069 (CCPA 1980)). Additionally, any of the above-noted resins would function as a binder when used in combination with the metal fluoride. With regard to the weight percentage of conductive particles in the protective layer, the claimed range of 2.5-96 % is not considered to distinguish over the reference. In column 27, line 45 the reference teaches that "[a]nother structure may be employed as preferred structure in which the concentrations (content) of the conductor, semiconductor and the insulating material in the composite layer are change[d] continuously or discontinuously in the direction of the thickness of the layer." As such, the reference provides guidance to optimize the amount of conductive material, thereby rendering the claimed range obvious.

The Idota et al. reference teaches a composite tin oxide negative electrode material in column 4, line 43-column 7, line 26.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because Idota et al. provide motivation for the artisan to use their negative electrode material in the battery of Kawakami et al. Idota's teaching of a nonaqueous secondary battery using the electrode material having "excellent charge and discharge cycle characteristics, a high discharge potential, a high capacity and high safety" (col.

7, line 22) would motivate the artisan to use the electrode material in the battery of Kawakami. Therefore, this limitation is rendered obvious by the disclosure of Idota.

### *Response to Arguments*

4. Applicant's arguments filed December 6, 2004 have been fully considered but they are not persuasive. Applicants state that since the purpose of Kawakami's protective layer is to reduce dendrites on lithium or zinc metal, the artisan would not be motivated to use the tin material of Idota in the battery of Kawakami. In other words, the use of any material other than lithium, lithium alloy, zinc or zinc alloy would defeat the purpose of Kawakami. However, it is submitted that Idota is also concerned with dendrite formation, as disclosed at column 3, line 32: "[t]his can be confirmed from the fact that (1) observation under a transmission electron microscope reveals no precipitation of a metal (especially no precipitation of a dendrite)." Thus, by using the tin material of Idota, which is inherently resistant to dendrite formation, prevention of dendrites in the battery of Kawakami would actually be *enhanced*. Merely using a different active material in Kawakami would not change the principle of operation of the reference. In fact, it is well known that replacement of lithium metal with an intercalation material enhances safety specifically because dendrites are prevented from forming and causing a short-circuit. Therefore, merely because Kawakami's purpose is to prevent dendrite formation on lithium metal would not be sufficient to dissuade an artisan from using a different active material to

enhance dendrite prevention or to obtain other advantages (see Idota at column 7, line 22). As such, the rejection as presented above is still believed to be proper.

### *Conclusion*

5. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the

Art Unit: 1746

organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Primary Examiner  
Art Unit 1746  
February 11, 2005